

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) Device for fusion and interfacial agitation of a diphasic system, the latter comprising first and second immiscible phases separated by an interface, this device comprising:

- a crucible (2, 28), intended to contain the diphasic system and
- fusion and agitation means provided for the fusion of the first and second phases and

the agitation of their interface, this device being characterised in that the fusion and agitation means include:

- ~~an inductor~~ a single inductor (4) surrounding the crucible and
- ~~means of supplying a single means of supplying~~ (18) this inductor by ~~a variable~~

~~current~~ a single variable current with first and second components, the first component having a first frequency and being capable of melting the first and second phases, the second component having a second frequency which is lower than the first frequency and capable of agitating the interface of the first and second phases.

2. (Original) Device according to claim 1, in which the means (18) for supplying the inductor are capable of providing an alternative current with the first frequency, this alternative current being modulated by the second frequency.

3. (Original) Device according to claim 2, in which the means of supplying the inductor include

- a capacitor (24) forming, with the inductor (4), an oscillating circuit that operates at its own resonance frequency, this resonance frequency forming the first frequency,

- an induction generator (22) provided to supply this oscillating circuit and
- a function generator (20) provided to impose modulation at the second frequency and to supply a reference current to the induction generator.

4. (Original) Device according to claim 3, in which the power of the induction generator (22) is in the interval from 10 kW to 300 kW.

5. (Original) Device according to claim 3, in which the resonance frequency is in the interval from 1 kHz to 20 kHz.

6. (Original) Device according to claim 3, in which the modulation frequency is in the interval from 0.5 Hz to 10 Hz.

7. (Currently Amended) Device according to ~~claims~~ claim 1, in which the crucible is a cold crucible (2).

8. (Original) Device according to claim 1, in which the crucible is a hot crucible (28).

9. (Original) Device according to claim 1, in which the frequency of the component which is capable of agitating the interface of the first and second phases is chosen low enough for the component to also be capable of agitating the second phase, when the latter is little electrically conductive, this second phase being above the first phase.

10. (Original) Device according to claim 1, including in addition means (26) for controlling thermal gradients inside the first and second phases.
11. (Original) Device according to claim 10, in which these control means comprise screens or susceptors (26).
12. (Original) Application of the device according to claim 1 to fusion and interfacial agitation of a diphasic system in which the first phase (8) is a metal and the second phase (10) is a slag or a salt.